

Common Name: **Mangrove Rivulus**
Scientific Name: *Rivulus marmoratus*



Photo Credit: D. Scott Taylor

Area of Concern: Western Atlantic: Florida
Year First Listed as a “Species of Concern”: 1997

Species Description:

The mangrove rivulus has a long slender, dorsally flattened body and a rounded caudal fin, and it is dark brown to green in coloration. The body may be mottled with small black dots and have a little orange coloration on body and fins. The maximum length is 60 mm TL, although the average is about 24 mm TL. Mangrove rivulus is one of a few known self-fertilizing hermaphrodites (both the eggs and the sperm are produced by one parent, and the young are genetically identical to the parent); although there are some populations that are non-hermaphroditic. Males are rare and have larger anal fins; both females and hermaphroditic individuals usually have a distinct ocellus on the caudal peduncle. Diet includes terrestrial and aquatic invertebrates (such as mosquito larvae), and the mangrove rivulus is known for its cannibalistic tendencies (e.g., eating its own eggs when in captivity). They forage infrequently, but usually during mangal flooding. Mangrove rivulus have been collected within broadly defined categories of microhabitats within the mangal (a forest of mangrove trees): crab burrows, stagnant pools, sloughs or ditches (often intermittently dry) and some fossorial niches (inside or under logs, debris, leaf litter, etc.). They have also been reported from cave systems and solution holes adjacent to mangroves in the Bahamas.

Rationale for “Species of Concern” Listing:

Demographic and Diversity Concerns:

The mangrove rivulus can be found from south-central Florida south through the West Indies to coastal areas of South America. It can also be found throughout the waters of Cuba, the Bahamas, Jamaica, and the Yucatan Peninsula. On the east coast of Florida, the preferred micro-habitat is the land crab (*Cardisoma sp.*) burrow. In south Florida and on the west coast the preference is for stagnant pools and old mosquito control ditches in mangrove forests. In mangrove systems, rivulus has been collected in salinities ranging from 0-68 ppt, and in the laboratory juveniles remained viable at 70-80 ppt. The rivulus can also be found in a large range of temperatures, from 7-38°C and can survive in temperatures as low as 5°C.

Factors for decline:

This species is extremely vulnerable to habitat modification, environmental alteration, and human development/encroachment. Much of the suitable habitat has been isolated and fragmented as a result of the destruction of mangroves, such as mangrove “trimming,” and impounding of high marsh for mosquito control. Although it is obvious that the population of this species has been dramatically reduced, it is difficult to evaluate the distribution and status because of natural rarity and its cryptic tendencies. Because of its preference for land crab burrows, the mangrove rivulus may have decreased habitat availability with decreasing numbers of *Cardisoma*. More information needs to be gathered regarding the relationship between these two species. A natural threat to the rivulus is the formation of hydrogen sulfide (H₂S) from the decaying input from the mangroves. The formation of this gas depletes the oxygen in the water. However, the rivulus has a natural mechanism for coping with normal levels of H₂S toxicity

Last updated 4/13/2004

Status Reviews/Research Completed or Underway:

In 1999, NMFS supported a status review entitled “*Rivulus marmoratus* status review: consideration for listing under the Endangered Species Act”. More information is needed before a determination on the status of this species can be made.

For further information on this Species of Concern, or on the Species of Concern Program in general, please contact Ms. Marta Nammack, NMFS, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, (301)713-1401, Marta.Nammack@noaa.gov ; or Dr. Stephania Bolden, NMFS, Southeast Region, Protected Resources Division, 9721 Executive Center Drive N., St. Petersburg, FL 33702, (727)570-5312, Stephania.Bolden@noaa.gov.

References:

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